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WALTON'S RIVER AND BOOK.

No river in England possesses so undying a charm for the angler as the Dove. In a country celebrated for the limpid clearness of its streams, the verdure of its valleys, and the loveliness of its wood-clad hills, the scenery which surrounds the little Derbyshire river may be said to bear the palm. The origin of the river's name has long been matter of conjecture. Some have derived the name from the British word *dwfr*, (water); others, such as Cotton, ascribe it to the purity or swiftness of the stream. Cotton's lines are well known:

> Such streams Rome's yellow Tiber cannot show,
> The Iberian Tagus, or Ligurian Po.
> The Maese, the Danube, and the Rhine
> Are puddle-water all compared to thine,
> And Loire's pure streams yet too polluted are,
> With thine much purer to compare.
> The rapid Garonne and the winding Seine
> Are both too mean,
> Beloved Dove, with thee
> To vie priority.
> Tame and Isis when conjoined submit,
> And lay their trophies at thy silver feet.

But though there are few rivers—especially in these days of river-pollution—which can vie with the Dove in clearness and purity of current, that which distinguishes it from other rivers, even in Derbyshire, is the constant recurrence of miniature cascades or cataracts, which by their pleasant ripple lend enchantment to both eye and ear, and are singularly in harmony with the landscape around. On either bank, almost abruptly from the water's edge, rise limestone hills, clothed with the thickest foliage; the rocks here and there forming the most fantastic shapes—now a spire, now a tower, now a lion's head. It was in ascending the precipitous side of one of these hills that the Dean of Clogher lost his life in the last century. The Dean, who was on horseback, attempted to ride up the cliff, accompanied by a young lady belonging to his party, named La Roche. The same horse was to convey the rash equestrians up the ascent. It proved unequal to its task, although a considerable elevation was gained. Both riders fell with the animal. The Dean expired a few days after, from the effects of the fall, and was buried in Ashbourne Church. Miss La Roche, however, was fortunately saved from destruction. Her hair had become entangled in a bramble-bush; and though she remained in a state of insensibility for two days after being disengaged, she eventually recovered. The horse, curiously enough, was but slightly injured.

Of the scenery of Dovedale we have no wish to speak further. It has frequently been described; but no pen can do it justice. For generations, its rocks and waters have been the delight of poet, angler, and tourist. Not a mile distant lies the lovely village of Ilam, nestling in a kind of natural amphitheatre of hills. Tradition considers this spot to be the Happy Valley described in Dr Johnson's *Rasselas*. However this may be, it is certain that few scenes breathe so perfectly the air of calm and peaceful loveliness. Four miles below, at Mayfield, lived the poet Moore. Here he wrote his *Lalla Rookh;* and the sound of the Evening Bells ringing in the ancient church of Ashbourne is said to have suggested to him that well-known melody.

But as the Dove is pre-eminently the angler's stream, owing to the excellence of the trout and the grayling which abound in its waters, so the memories which are chiefly connected with the dale are those of anglers. Hither, in the seventeenth century, came Walton, the 'Father of Anglers,' and his adopted son, Charles Cotton, both of whom are closely identified with the spot. Cotton's *Second Part of the Complete Angler, being Instructions how to Angle for a Trout or Grayling in a Clear Stream*, is associated with this river. Here we may see with our own eyes the fishing-house, with date 1674, where Walton and Cotton smoked their pipes and held many a pleasant conversation, and from which they surveyed the country round. Of the country, Walton in a note remarks: 'Some part of the fishing-house has been described; but the pleasant-

ness of the river, mountains, and meadows about it cannot, unless Sir Philip Sidney or Mr Cotton's father were alive again to do it.'

The trout-fishing in the Dove is at times very good, though, owing to the extreme clearness of the water, and the consequent shyness of the fish, it is now infinitely more difficult to obtain good sport than it could have been in the days of Cotton. In parts, however, good baskets may be made after rain; the writer, indeed, of this paper had some most successful trout-fishing only the day before penning these lines in the very water on which, two hundred years earlier, fell the primitive tackle of Walton and Cotton. Very different contrivances are now needed to delude the wary trout of the Dove than were necessary in the year 1675; and were Cotton once more alive in the year 1887, he would doubtless be astounded at the degree of refinement to which the gentle art has attained.

But who was Izaak Walton? What did he write? and why should his book, the *Complete Angler*, though written more than two hundred years ago, be held in honour by the anglers of the nineteenth century, notwithstanding that improvements in tackle and increased knowledge of fishing have rendered the instructions therein laid down chiefly out of date? Such are questions which must often occur to the ordinary tourist who visits Dovedale, and hears mention made so often of Walton, or of his adopted son, Charles Cotton.

We will begin by considering the last question first. We believe the high regard in which the *Complete Angler* is still held to be due to the fact that no other work has ever been written on angling which deals so admirably with the contemplative nature of the pursuit. It should be noticed that the full title of the treatise is *The Complete Angler, or the Contemplative Man's Recreation*. Walton's book analyses, so to speak, those emotions which are specially called forth by the influences of fresh air, sunlight, and dashing streams. Without following too closely the arguments by which he attempts to prove the authority of Scripture for his favourite pastime, we may yet admire his acuteness as a special pleader on its behalf. To quote one passage as an example. After mentioning that four of the twelve apostles chosen by our Lord were simple fishermen, he goes on to say: 'He [that is, our Lord] never reproved these for their employment or calling, as He did Scribes and money-changers. And secondly, he found that the hearts of such men by nature were fitted for contemplation and quietness, men of mild and sweet and peaceable spirits, as indeed most anglers are; these men our blessed Saviour, who is observed to love to plant grace in good natures, chose to call from their irreprovable employment of fishing, and gave them grace to be His disciples and to follow Him and do wonders.'

The allusion to the ancient canons of the Church which forbade hunting to churchmen, but permitted angling, as a 'recreation that invited them to contemplation and quietness,' is singularly apposite. Nor are Walton's examples of anglers, selected from men nearer to his own time, badly chosen, as instances of the contemplative spirit which he seems most to praise. Dr Nowell, Dean of St Paul's in the reign of Elizabeth, and writer of a Church Catechism, is first mentioned. 'The tenth part of his time,' says Walton, 'was bestowed on angling; and the tenth part of his revenue, and usually all his fish, was bestowed on the poor who dwelt near the rivers in which it was caught.' God he had spent to his house, he would praise [illegible] both harmless that day free from worldly trouble, a churchlessly and in a recreation that became [illegible]e may man.' The picture of this worthy divine there be seen at Brasenose College, Oxford. He is represented with his Bible and fishing-rod, and beneath, the inscription, that he 'died February 13, 1601, aged ninety-five years, forty-four of which he had been Dean of St Paul's Church; and that his age had neither impaired his hearing, nor dimmed his eyes, nor weakened his memory, nor made any of the faculties of his mind weak or useless.' Walton remarks: '"Tis said that angling and temperance were great causes of these blessings; and I wish the like to all that imitate him, and love the memory of so good a man.'

Walton himself outlived the allotted span of human life, dying at the age of ninety-one.

His next example is that of Sir Henry Wotton, the poet-provost of Eton, a man who had had a most brilliant and honourable career as a diplomatist in stirring times. Walton quotes a saying of Wotton's which will bear requoting: 'He [Wotton] would say of angling, "'Twas an employment for his idle time, which was then not idly spent; for angling was, after tedious study, a rest to his mind, a cheerer of his spirits, a diverter of sadness, a calmer of unquiet thoughts, a moderator of passions, a procurer of contentedness."' Wotton's memory has been embalmed by his friend in Walton's *Lives*, which were published in 1670, being the lives of Hooker, Sanderson, Wotton, Donne, and George Herbert. Of these *Lives*, the poet Wordsworth has well said:

> There are no colours in the fairest sky
> So fair as these. The feather, whence the pen
> Was shaped that traced the lives of these good men,
> Dropped from an angel's wing.

The greater part of the *Complete Angler* is occupied with instructions as to how to capture the various kinds of fish, giving also a certain amount of natural history. With regard to the instructions to anglers, we need only remark that though many of Walton's precepts hold good even now, yet anglers are likely to pay more attention to the advanced treatises of Pennell, Francis, Foster, Stewart, and others. In his remarks on the natural history of fish and water-insects, he shows considerable knowledge, although he evinces too great an inclination to give credence to the absurd stories of the middle ages regarding the pike, carp, and eel. But we must remember that even in our own time little is known of the food and habits of the salmon, none being more ignorant than the professional fishermen themselves. A quaint humour mingles with his directions; thus, the angler when tying a frog on the hook, as a bait for pike, is 'to use him as if he loved him, that he may live the longer.' Or, to quote his address to a disciple of the angle: 'Indeed, my good scholar, we may say of angling as Dr Boteler said of strawberries, "Doubtless God could have

made a better berry, but doubtless God never did;" and so, if I might be judge, God never did make a more calm, quiet, innocent recreation than angling.'

The work is enlivened here and there with songs composed by Wotton, Walton himself, and others. All deal with the contentment of a country life, the freedom from worldly care, and some with the recreation of the angler. Originally a London tradesman, Walton had retired to a country house near Stafford when middle-aged. His second wife was the sister of Bishop Ken; to her he alludes in his poem of *The Angler's Wish*. The poems composed by Walton were sung by the melodious voice of his wife. At Dovedale, Walton was the guest of his adopted son, Cotton, who, though nearly forty years his junior, was united to him by the closest bonds of affection. The characteristic feature of the *Complete Angler* is, as we have said before, the spirit of contemplation which is therein expressed. Walton never wearies of insisting on the happiness which lies open to those who try to read the secrets of nature aright, and to enjoy the contentment which may be found by a quiet spirit in a calm and beautiful landscape. An instance of the soothing and tranquillising effect of this pursuit upon a mind overwrought well-nigh to madness will occur to readers of the biography of Mark Pattison, but lately published. At a terrible crisis of his life, it was a visit to his native streams of the north which at the time saved the late rector of Lincoln College, Oxford, from serious illness, if not from death.

We will close this sketch of Walton and his book with a few of its concluding words: 'Nay, let me tell you, there be many that have forty times our estates, that would give the greatest part of it to be healthful and cheerful like us, who, with the expense of a little money, have eaten and drunk, and laughed and angled and sung, and slept securely; and rose next day and cast away care, and sung and laughed and angled again; which are blessings rich men cannot purchase with all their money. Let us, therefore, be thankful for health and a competence, and above all, for a quiet conscience.'

RICHARD CABLE,

THE LIGHTSHIPMAN.

CHAPTER XVIII.—THE YOUNG CUCKOO.

JOSEPHINE was wet, shivering, not unconscious, but as one distracted, unable to answer questions. A second time Richard Cable bore her in his arms; but before, she had been hot, with throbbing heart and heaving bosom; now, she was cold, trembling, and her breath coming in sobs. How she clung—with every finger as though it were a claw. Richard could feel each several finger through his jersey. Her gasping breath was on his cheek. She made no attempt to speak, to explain her conduct, to account for what she had been doing.

He did not ask anything after the first hasty query, but carried her in his strong arms as firmly, as evenly as he had carried the bath of soapy water previously. He took her up-stairs, and placed her in his mother's chair in the same room with the seven little children. There were only two bedrooms in the cottage—that occupied by the babes and their grandmother, and his own; the latter a lean-to room, into which the stair opened, and where only on one side was it possible to stand upright. Mrs Cable followed him silently. The first thing to be done was to change the girl's clothes.

'I will run to the Hall for a dry suit,' said Richard.

Then Josephine started up and held out her hands with palms extended, quivering in remonstrance.

'Do you not wish it?' he asked gently. She shook her head. He saw that she tried to speak, opening her mouth; the lips were white, but she could not utter anything. 'Sit down again in the chair,' he said persuasively; 'my mother will lend you dry things.'

Then he went down-stairs and made up the fire. A second time Josephine had been in his arms, a second time he had saved her from a watery death, and this time she was seeking her death. What had happened at the Hall?

Richard Cable left the room below; he could not be quiet; a restless fit came on him, and he went into the garden. He walked about there, found the blue tub empty, and brought it indoors. He listened, but could not hear that Josephine was speaking. His mother was silently attending on her. He heard the heavy tread of the old woman on the boards.

Ought he to go at once to the Hall and communicate with Mr Cornellis? He did not know. Josephine evidently disliked the idea of his going there; but was it not his duty to go? He must wait a while till Josephine could explain what had occurred, and then he would know what course to adopt. He could not see the window of the bedroom from the garden; it looked out on the road; on the garden side was only roof. He went round into the highway and walked in the road, and looked up at the window. There was no light in it. No candle was needed; it looked north-west, and the northern sky was full of silvery light. Were all the children asleep? There was no little voice heard, not even that of the baby, who, as a privilege, was laid to sleep in its father's bed, and only taken into its grandmother's when she retired for the night. How shrewd little Bessie was! She would go to sleep in no other bed. In vain did her grandmother try to lull her to roost in her own room; the blue peepers would not shut. They looked dazed; and the heavy eyelids fell over them, then drew up again, and intelligence came into the eyes, and, alas, at the same time a peevish look, and whining began. Nothing would satisfy the tiny creature but to be put to sleep in the mean little lean-to room, on the small hard bed of the father, a bed he only occupied when off duty from the lightship. Of lightships, of duty,

nine-month-old Bessie knew nothing; but she knew the lean-to roof and the little bed; and, by some mysterious instinct, was aware that it was her father's, and that she could sleep better in it than elsewhere.

When Richard Cable came up-stairs for the night, the baby was gone, but in the pillow was a dint such as his fist might have made, and he knew it was the impress of Bessie's head.

He had spent thirteen contented years with his Polly; he had been much attached to Polly, whom he respected; but there had been no close union of souls in their marriage. Polly was a lusty lass when he married her, a hard-working girl, much engrossed in her daily tasks, and able to think and talk of nothing else. Richard was a meditative man; his mind was always engaged, though his hands were sometimes idle. His occupation on the lightship had fostered this habit. He did not open to many; he had few friends, but every one respected him. He had inherited from his mother the tendency to feel most interest in those who needed help, to love those who clung to him. His wife had been an independent woman, going her own eminently practical way, asking for no guidance and support, because she needed neither; but it was different, of course, with the babes; they all were helpless; they all depended on their father, and therefore they filled a greater part of his heart than Polly had done. It is the place of the elm to sustain the vine; it is the privilege of the vine to cling to and ramble over the elm.

Nature has made some plants creepers, and others sustainers. The creepers sometimes strangle their supports, if too embracing, contracting, exacting. A sustainer can hold up without hurt a vast amount of parasitic growth—honeysuckle wreaths, exhaling sweetness; evergreen, glistening ivy; crimson and gold clothed Virginian creeper. It is only when the clambering plant has thrown its tendrils over the head of the supporting tree, that the tree breaks down under its burden. It is wonderful, sometimes, what a glory a commonplace tree will acquire from the parasite that clings to it: in itself it is nothing; as a means of displaying its mate, it is beautiful. I have seen an old dead trunk wreathed about with wisteria, beautiful with the lilac chains that hung about it; surrounding it with an atmosphere of honeyed sweetness; and I have seen human wisterias clinging, trailing, embalming, adorning dead memories. Though what they envelop and beautify is dead, it matters not; it is something about which they can cast their arms and hang their chains of flowers, and breathe forth the incense of their innocent souls.

These same climbers deserve a chapter in the great gardening manual of human souls. How indifferent they are to what they lay hold of, if only they may have a support. How the delicate little pink hands of the *Ampelopsis* grapple a piece of granite, and hold it that you cannot tear them away, and riot over it, and wave triumphant wreaths of victory and rejoicing. How the jessamine laces with ribbons of green round the rugged-barked pine, in preference to the smooth-skinned beech; and the pure *Devoniensis* holds to the common clay garden wall and laughs, leaning against it, with thousands of delicately blushing blooms, flowery whispers of happiness and love and pride; whereas it scarce shows a few blossoms, and the buds decay unburst, against the stately hewn-stone mansion wall. Why does the Bankshire prefer a cold and cheerless aspect to that which is hot with sun? Verily, the creepers deserve attention in the world-garden of humanity.

But, what are we about, rambling concerning ramblers? when our subject is the prop up which seven little climbers are throwing their tendrils, and, at this moment, an eighth, no seedling, has cast her arms and asked to be sustained, and lifted high out of the sordid soil?

Richard Cable saw the blind drawn in the lower cottage window, and then a flush of light over it; so he knew that his mother was below, and had kindled the lamp. Thereupon he went indoors, and found Josephine in his mother's Sunday dress, seated by the fire, in his mother's high-backed leather chair, a chair that had belonged to her father, who was drowned. Josephine was very pale and sallow; her hands rested on her lap; she was looking into the fire, and the flames reflected themselves in the large dark irises. She did not seem to observe Richard's entrance; she did not turn her head or raise her eyes.

Mrs Cable was engaged between the back and front kitchen, getting some of Josephine's wet clothes cleaned of the mud that adhered, wringing them out, and putting them on lines where they might drip and dry.

Richard Cable went to the fireplace, and leaned against the brick jamb, looking at the girl. In the wooden houses of the coast, the chimneys are built of brick, and there is a brick basement on which the wooden walls rest.

'Please, Miss Cornellis, I'm sorry to interfere; but I'm bound to ask—what is to be done?'

She folded her hands, slightly raised her chin, and then her head sank again, and the eyes remained staring at the fire.

He waited a minute, still observing her, and then he said again, in a low, gentle voice: 'I'm sorry to be disturbing you wi' axing of questions as may seem impertinent, miss; but I'm bound to repeat the same thing—what is to be done?'

Again she made a slight movement with her chin, and unclosed, then reclenched her hands; but she said nothing.

Presently little Bessie began to cry up-stairs, and Mrs Cable ran up. It was the child's hour for supper, and she was exact to her time in demanding her bread and milk.

A third time Cable asked the question, and then Josephine slightly shook her head.

He must extract an answer from her; he must do something. She could not remain in his house without his letting her father know. He took a step towards her, and laid his hand upon her head, as he had laid it that same afternoon, and now, as then, the dark hair was wet. 'Is the head burning?' he asked.

Then she looked up at him without moving

her head; her eyes were large, and had a strange far-away look in them.

'Now, Miss Cornellis, answer me—what is to be done?'

'I do not know,' she replied.

'But,' he said, 'I must be told. I must do something about this matter.'

'I leave it all to you.'

'May I take you back to the Hall? If you cannot walk, I will carry you.'

She held her head steady under his hand; she did not shake it, but said: 'No; I will not go back there. I will stay here, if you will take me in. If not, I will go back into the sea.'

'Miss Cornellis,' he said after a long silence, 'I do not understand what has happened.' Then he took away his hand from her head, which was not hot, but cold, and knelt down by the fire on one knee, and stirred up the logs, and threw on a few small sticks that crackled and blazed.

'I will not go home any more.'

'But the Hall is not your home; it belongs to Mr Gotham.'

'I will not go home to my father again.'

'Has there been a quarrel?'

'He has been angry. I will not go near him again.'

'Did he—did he strike you?'

'Strike me?—Oh, not with his hands. I should not mind that.'

'What did he do? I must ask. You leave me to decide what is to be settled about you; and I cannot decide without knowing the circumstances.'

'I am not going back to him.'

'Did he—excuse me—drive you out of the house?'

'I left, because I could not stay.'

'Why could you not stay?'

Her fingers in her lap worked nervously; she plaited and unplaited them; she twisted them on one hand, and then smoothed them with the other.

'I cannot tell you all. Would you take the lamp away? The light hurts my eyes.'

He complied with her wish, and placed the lamp in the back kitchen. Up-stairs was Mrs Cable getting the baby to sleep. Richard heard her singing:

'There 's grog in the captain's cabin,
Water down below.'

He returned to the fireplace and stood against the jamb, opposite her, and said: 'Tell me everything, Miss Josephine. I am your friend. I will advise.'

'I know you are my friend,' she answered. 'I will tell you what I can; but my head spins, and I cannot think; I cannot recollect everything.' She was in no hurry; she knitted her brows, trying to recollect the chain of circumstances. Presently she said: 'It was the rector's fault; he told Aunt Judith, and she, of course, went at once to papa and told him.'

'Told what?'

'I had seen the rector this morning, and he took me to task about going on the wall to you the night of the fire.'

'It was an unwise thing.'

'You also are against me. I will say no more. Every one is turned against me. Everything I say works people up into hatred of me. I am a miserable, unhappy girl.'

'Miss Cornellis, I am not turned against you. I say what your own common-sense has told you, that you acted imprudently that night.—The rector spoke about it to Miss Judith?'

'And she, blundering, stupid old creature, went with it at once to papa. I was not in then. When he did speak to me, I saw he was angry. He does not turn red, but a greenish white, and he speaks slowly, but every word cuts like a razor; and not only so, but every word is dipped in venom, so that when it has cut you, the wound goes on festering for months, and perhaps never heals at all.'

'Your father!'—Richard spoke in slow wonder—'a father hurt, poison the blood of his child.' It was to him inconceivable. He would have allowed his flesh to be torn off his bones with red-hot hooks and pincers, rather than wound or bruise one of these tender, fragile, little innocents that looked up to him in love and trust.

'My father as he speaks, when he is very angry, has a face like a dead man; but his eyes blink, and now and then he quivers, just as though he felt an electric shock; and then he is as if he would hurt with his hands; but he controls himself again, and stabs instead with his tongue.'

Richard Cable drew a long breath, and put his hand across his chest to the mantel-shelf.

'When my papa spoke to me, I knew at once he was in one of his worst moods. And I—as I always do—was ready to fire up. I am not afraid of him; he does not cow me. He makes my heart boil and foam over.'

'Does he not take you to him, and put his arm round you, and speak low, and tell you that you have pained him, and that he loves you very, very dearly?'

'Never!' said Josephine decisively. She was recovering herself. As she thought over the scene she was describing, the heat returned to her heart and fired her veins.

'Then I acknowledged it all when he charged me; and when he sneered, I said that was not all. I told him that I had bought you the ship, given it my name, and that I should pay for it out of the insurance money for Rose Cottage.'

'What is that?' asked Cable.

She was excited now, and went on, disregarding his interruption. 'He was trustee for my little fortune left me by my mother, and he has made away with that—how, I do not know. I did not know it was gone when I ordered the vessel. Now that it is bought, I thought I should like to pay for it, though it does not really matter, as my cousin Gotham will advance—will give me the money. Yet, when my father took this line with me, I was angry, and said I would claim from him some of my money out of what he would get from the insurance Company. Then he stung me worse and worse; and just as a hornet will drive a horse mad, so did he make me forget everything but my pain and wrath—and I said something—about the fire.'—She paused, hesitated. 'Even to you, I cannot repeat it.' She halted again. 'But I believe that what I said was true.' She stammered.

'Yet, I ought not to have said it. He is my father.' Then she drew her feet together, and put her hands on the elbows of the chair, and raised herself, and her face flamed crimson, and the very hair on her brow seemed to bristle with electric excitation, and sparks to shoot out of her eyes. 'It was then he used words to me that I shall never forget—never forgive!' She stood shivering with wrath, looking very tall in the long black dress of Mrs Cable, and in the dark room, with the firelight alone illumining her. 'After that, I would not stay.' She spoke slowly, and with intervals between her sentences, which came forth as the discharge of minute-guns at sea from a foundering vessel. 'I could not stay.' She shook so that she rattled the armchair which she touched with one hand. 'I had no home more.'

'But,' said Richard, 'though he angered you, he was your father, and a father'——

She did not allow him to conclude; she said harshly: 'Do you not understand? There are things which even a father may not say. As there is a blasphemy which has no forgiveness, neither in this world nor in the world to come, so is there an insult which cannot be endured nor be forgotten.' Her face was dark, and startled Cable with the rage and bitterness that was in it, lit with the glare from the fire.

'Why did you not go to the rector?' asked Richard.

'The rector!—after I had refused his son, and laughed at him?' She shook her head. 'There was no place to which I could go. Rose Cottage is burnt down. The Hall is no more a home. The rectory doors I have closed against myself. To this house I could not come.'

'Why not?'

She looked at him, then her eyes fell, and she looked into the fire. 'Because of what my father had said. There was no place for me—but the sea.' Then, unable to sustain herself longer on her feet, she sank back into the chair.

After considering a while, Richard Cable said: 'Miss Cornellis, it was God's doing that I was the means of saving you before in the lightship. It is God's doing that I have been the means of saving you this night. Therefore, what am I, to oppose His will? I will go at once to the Hall and tell Mr Cornellis that you are here and will remain here.'

'He will insult you.'

'I am not afraid of him or of his words. And when I've told him, miss, that you are here, then I'll get out my boat and row away to the new lightship, and stay there for ten days or a fortnight.'

Then, as he moved to go, she started to her feet again and caught his arm with both her hands, and quivering with excitement, said: 'Do not go—do not leave me helpless, friendless. I cannot bear it. There, there—I will kneel to you, if need be, and entreat you. Be Master, Captain, Pilot—everything to the *Josephine*.'

He took her hand between his own, and said very gravely: 'As I said before, I say again—I'll do my duty by her, so help me God!'

Then Bessie Cable came in, and a brilliant light from the lamp she carried fell over them, hand in hand.

'And now,' said he earnestly, 'I go with a firm confidence to your father, for I have a right to speak in your defence and for you.'

But Mrs Cable looking on, put her hand to her brow and said: 'The young cuckoo is in the nest!'

(To be continued.)

BEN NEVIS OBSERVATORY.

I HAD agreed to relieve one of the observers at Ben Nevis Observatory for a fortnight in the month of June last. I decided to proceed to Greenock, and go the rest of the journey by steamer. After a journey of about fourteen hours, Fort-William is reached at eight P.M. Having engaged a bedroom at the *West End Hotel*, I proceeded to the post-office, and obtained permission to 'talk' to the observatory people by telegraph, to whom I intimated my arrival and my intention of making the ascent on the following morning. I was then introduced to the care-taker of the observatory road, who ascends nearly every day during the summer months with provisions and stores, and who was to act as my guide the next day. At eight o'clock next morning, as arranged, I found the guide and another man with two horses and a cart ready to start. We soon arrived at the base of the Ben, where the horses were unyoked, and the contents of the cart tied securely over their backs. I had been advised previously to walk on without waiting for this being done, as the horses would probably go too fast up hill for me to keep up with them. There was no fear of losing myself, for a while at least, as the road is well made, so I set out at a steady pace, determined to reach the top, if possible, before the horses.

The climbing was rather warm work. The first part of the road was pleasant; but by-and-by, as I went higher, the clouds began to make themselves felt, the air became cooler, and the place presented a strange, desolate appearance. I thought of Rip Van Winkle, and started once or twice as an unearthly-looking face peered over a huge stone at me. It was only a black-faced sheep, however, which scampered away at my approach. After going about two thousand feet high, I saw the clouds immediately above me, and very soon felt them as well. I was now completely enveloped in a wet mist. I was loth, however, to give way. 'Excelsior,' I muttered, and clutched my useless umbrella with determination. At last I had to stop. I had passed small patches of snow here and there on my way up; but now there was one great bank of snow which ascended as far as I could see. There was consequently nothing else for it but to wait for my guide, which I did as philosophically as possible. Not very long afterwards I heard the horses labouring up the hill, and was soon joined by them. I had now to follow up behind the best way I could, and very hard tiresome work it was, struggling and blundering on through the snow. Once or twice the horses had to be stopped, to allow me to overtake them. After half an hour of this work, we caught sight of the observatory, and almost immediately afterwards were welcomed by the Superintendent, Mr Omond, and the other observers who had come out to meet us. I was drenched to the skin, and unfortunately had not made provision for such

an emergency; but what I required was kindly provided. The next day I was clothed in the robes of office peculiar to the place and climate, of which more anon, and during my stay became so accustomed to oilskins and sea-boots, that I was almost sorry to relinquish them before descending.

The life of an observer on the summit of Ben Nevis can hardly be described as a happy one, yet in spite of the monotony of severely disagreeable weather and a seeming repetition of the previous day's existence, the devotees at the pinnacle of science do not pass an unpleasant time. This I am able to testify from the experience of a fortnight's voluntary exile at the observatory. It may be thought that my spirits were buoyed at the prospect of a release and a descent at the end of two weeks; but that does not account for the pleasant recollections which I retain of the observatory and its inmates. There were the instructive conversations on meteorology; the genial company of the observers; the cosy evening smokes round the kitchen stove; the whist parties; an occasional visit to tea at the 'hotel' on the summit; the unusual experience of appearing at those 'teas' attired in oilskins and sea-boots; the novelty of living among the clouds and seeing nothing but fog and snow from morning till night; the fun of going out in the morning to fill the buckets with snow for the day's water-supply; the melting of it previous to performing the morning's toilet; the reducing of it to liquid for domestic purposes; and the consuming of it in the shape of tea and coffee. There were also a goodly number of well-selected books with which any leisure time could be profitably spent.

But the 'natives' are not allowed to die of ennui at Ben Nevis Observatory. The amount of work to be performed puts that out of the question. Observations are made hourly, night and day; and it is not, as may be supposed, simply a matter of rising from your seat and looking at the barometer. Elaborate preparations have to be made. Punctually at five minutes before the hour, the observer proceeds to clothe himself in apparel suitable to face the outside elements. Sea-boots, thick worsted gloves, oilskins, and sou'-wester are donned as quickly as possible. The room is rather dark, as the snow still covers the windows, and in order to read the barometer a candle is required. After the candle has been lit, the clock is watched until it is precisely the hour, then the barometer reading is taken, after which the observer goes outside to make the other observations.

It is early in June, and there is still a considerable depth of snow on the summit of this, the loftiest mountain in Great Britain. The observer has to climb quite a small hill of it at the door ere he reaches the surface. Once there, what a glorious view could be had, were it not for that provoking fog. Day after day and week after week it envelops the top with a density and persistency that baffle all description. The most striking and extensive view in Scotland is by its means reduced to the most miserable and limited one of a few yards in circumference. What a strange quiet there is! Not a sign of life out-of-doors. The observer is, to all appearance, monarch of all he surveys; and as he trudges along through the snow with his raingauge and spir[illegible]t-level in [illegible] snow hand, and considers that all he surveys is [illegible]otic and fog, it is not surprising if he is unpatr[illegible] enough to wish that his possessions would mak[illegible] themselves scarce. Although it is the month of June, the thermometer still registers several degrees of frost; and on one day during my brief sojourn in the clouds, four thousand feet above my friends below, about a foot of snow fell in less than twelve hours. It can be understood that no more time than is necessary is spent outside in conditions like these. His observations over, the observer hurries 'home' again and divests himself of his oilskins. He then 'corrects' his readings and enters them into several sheets. Besides this, a good deal of time is occupied in summing up the previous day's observations, calculating the averages, finding the humidity, vapour-tension, and dewpoint of each hourly observation; the same having to be performed for the weekly and monthly averages. If it should happen that he finds himself in possession of some spare time, the science of meteorology affords sufficient food for the digestion of his philosophical inquiries from one year's end to the other.

It speaks well for the observers' devotion to duty, that during the long boisterous winter months of last year, except on the occasion about to be referred to, not a single hourly observation was lost. For one whole week in February, every observation had to be taken by two observers roped together. Storms of this force are of frequent occurrence; but it is fortunately seldom that it blows with such force as to stop the observations even by this means. On one occasion, however, all outside observations were stopped for fifteen hours. Mr Omond, in referring to the matter, says: 'A terrific southerly gale blew with almost hurricane force, and stopped all outside observing for fifteen hours. It was impossible to stand or even to crawl to windward; while the most carefully shielded lantern was blown out at once. During the height of the gale, the air was full of snowdrift, intermixed with which were great lumps of hardened snow, that had been torn from the ground by the violence of the wind. One of these flying pieces broke the only window that was above the snow and exposed to the gale; and another smashed half-a-dozen louvres in the Stevenson's screen for the thermometers.'

In the winter months, unusual caution has to be exercised by the observers for their safety. The observatory house is entirely covered over with snow, with the exception of the tower. During the prevalence of thick fog, therefore, the observer has to feel his way to his outside instruments by means of a rope connected with them and the tower. He has to use the same guide in returning to the house, for although it is but a few yards off, the house is entirely hidden by the fog.

One of the observers tells of an experience that might have had serious results. He was on the 'nightwatch,' and the other two had retired to rest. The night was an ordinary Ben Nevis winter one—a good deal of wind, snow, frost, and fog. While shutting the tower door on the outside, the handle broke, and he was left standing in the storm with no means of admission.

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The low-level door was entirely covered over, and there was nothing visible except the tower and the top of the chimney. After hammering at the tower door some time, he found that it was impossible either to force it open or to attract attention by its means. He then turned his attention to the chimney, and kicked and shouted into it until he was hoarse. There was only one thing left, and in desperation he made up his mind to it—that was, to attempt to reach Fort-William. Fortunately, his voice had aroused one of the sleepers within, who speedily admitted him, to the saving of his life.

The usual weather experienced on the Ben is a thick, wet, driving fog, or mist, with a temperature below freezing-point. More favourable conditions are so unusual, that there is considerable excitement when the top clears. After living in fog for a whole week, we were startled one night to hear from the 'nightwatch' that the top was clear. Instantly we rushed up through the tower and out on to the roof of the house. It was really true. The clouds that had rested on the top so long had fallen below, and left the sky above quite clear. It was a sight worth seeing. Huge cumulous clouds rolled over the tops of the lower hills, or rested in the valleys beneath. Sometimes a larger one would approach in a direct level with the top of the Ben and threaten to bury us again. But as it drew nearer, it also descended, and left us to enjoy what was really a magnificent piece of cloud and mountain scenery. By-and-by, as the night advanced, we had to retire, each hoping that the clouds would remain at their present low level.

The following morning, the clouds below and above had almost entirely disappeared; the horizon all round was clear, and so remained for two days. It is difficult to attempt a description of the delightful view from the top. As far as the eye can reach, on each side, hills and mountains of all shapes and sizes, some tipped with snow, are calmly resting, apparently enjoying the sunshine which has been so long a stranger. Here and there, as if purposely to enhance the picture, lies a loch or lake reposing between two gigantic mountains. Ben Lomond, Ben Muichdhui, Ben Wyvis, and quite a host of others, are pointed out. To the north of the Ben, the Caledonian Canal can be traced through Loch Lochy, Loch Oich, and into Loch Ness, where it hides itself in a valley before approaching Inverness. Looking westward, the islands of Skye, Rum, Colonsay, Islay, and Jura are plainly seen with the naked eye; while with the assistance of the telescope the Irish coast becomes visible. Turning to the other side of the country, the eye passes over the counties of Aberdeen, Banff, Nairn, and Elgin, into the Moray Firth and the German Ocean. Thus, by performing a right-about turn, the German Ocean and the Atlantic can be seen in the same minute.

Nothing can surpass the gorgeous sunsets that are to be seen from the Ben. Besides enjoying the appearance of all the beautifully tinted clouds that show themselves in an ordinary sunset, here the sun sends forth a thousand beams, distributing them over the hilltops and into the valleys, and throwing into each a variety of light and colour the beauty of which is indescribable. There are other objects to be seen which, while also having their origin in or from the sun, possess a non-material existence. They live quietly and unostentatiously, and glide imperceptibly to an end that is shrouded in the unexplored domain of mystery. They are never seen but on the silvery side of clouds, and are particularly fond of anti-cyclonic conditions of the atmosphere—conditions, by the way, that are not particularly fond of the Ben. Their existence is of a vapoury kind, and they may be conveniently classed under the heading of optical phenomena.

The 'glories' which are the most interesting of these mysterious visitors, are always seen when the top is clearing, and the sun shining on the fog or clouds below. There is a cliff to the north of the observatory which falls perpendicularly to a distance of two thousand feet, from the edge of which the 'glories' can be most favourably witnessed. Clouds frequently rest themselves in this gorge during their temporary absence from the top. When the sun is shining, it throws the shadow of the observer on the clouds, and forms round the shadow a series of beautifully coloured rings, the size varying with the sun's altitude. There is also the Ben Nevis 'spectre,' who haunts the top during the dark foggy nights of winter. He is not partial to summer weather, because in those regions darkness does not come. If meteorological conditions are favourable, the 'ghost' is easily brought into existence. All that is required is a lighted lantern and a person to show his shadow on the fog, and presto! his ghostship is complete. Like other ghosts, he can be seen, but not felt, for, as you approach, he retires at a corresponding rate. His size is abnormally large, and his covering, of the good, old, orthodox white. Unruly little children would grow peaceful under his influence.

Rainbows are very seldom seen, but when they do appear, they sometimes form a complete bow. Fogbows, on the other hand, both solar and lunar, are seen very often. Coronæ and halos also appear frequently, and with great beauty, when the top is clear. Occasionally, during anti-cyclones, the dryness of the atmosphere experienced at the observatory far surpasses anything to be met with at any low-level station in the country, and can only be compared to that of Arabia or the Soudan.

Tourists who experience this kind of weather on the Ben are fortunate. Those people, however, are generally very unlucky, and arrive at the top drenched, to see nothing but fog. They nevertheless put a cheerful face on matters, and try to look as if they enjoyed it. The pushing, self-assertive tourist is quite amazed to hear that he cannot enter the observatory, examine it, and go about peeping into every corner as he pleases. He seems to have left the foot of the mountain with the fixed idea that the observatory is a place specially erected to gratify the curiosity of travellers, and that the observers are individuals placed there to answer questions. It is with difficulty he grasps the idea of the observatory being erected only for scientific purposes. Of course each tourist must send a telegram from the top; his visit would not be complete without it; and he usually displays an alarming disregard for truth in estimating the depth of the snow. If we were to accept the testimony of these telegraphic witnesses, they would make us believe

that the snow varies from ten to fifty feet in depth. Notwithstanding the wet condition of the weather, the visitors occasionally manage to put a little humour into their telegrams.

The ascent from Fort-William can be made in three hours; but travellers generally take longer. The distance is a little over seven miles; and the road, although vastly improved by the observatory people, is yet very rough. Vegetation entirely disappears after attaining a height of about two thousand feet, after which there is nothing but large stones under foot until reaching the snow. Visitors can be supplied during the summer months with tea and coffee by an enterprising Fort-William hotel-keeper, who has erected refreshment rooms on the summit. Owing to the number of visitors who arrive at the top during the summer months, it is impossible to admit them to the observatory, as it would interfere with the work. Ordinary visitors need not, however, feel any great disappointment at this; there is nothing very interesting to the uninitiated in the various meteorological instruments in use. They can be described in a few words.

The Barometer is on Fortin's principle, that in which the surface of mercury is adjustable by means of a thumbscrew. There is the great Dry Bulb, which is seldom dry, and its fellow in harness, the Wet Bulb, with its hood of muslin and its tiers of cotton. The Raingauge, too, receives its hourly visit, when it is replaced by another, taken indoors, thawed, and its contents measured. Then there is the Black Bulb, which is used only to measure the heat of the sun's rays. There is also the Sunshine Recorder, which leads an idle life, and is usually left at home, because there is seldom any sunshine to record. It is a large glass ball placed in a sun-dial arrangement, which burns a black mark on a paper beneath, on which is inscribed the hour of the day. There is the Spectroscope, which is prosaically carried in the waistcoat pocket of one of the observers. Through it, the mysterious rainband becomes visible. The Anemometer, which measures the velocity of the wind, is placed on the highest part of the observatory. Near it is the Weather Vane, which persists in keeping its head to the wind, and whose movements are carefully recorded inside by a clockwork instrument which is on the watch night and day. Lastly, there is the Stephanome, invented by Professor Tait, for measuring the dimensions of objects that have no bodily existence, such as rainbows, coronæ, halos, and the like.

The observatory itself is a one-story building, the inside being of wood, with an outside covering of rough stones from three to four feet in thickness. The inside comprises a kitchen and office, four bedrooms, storerooms, and other necessary compartments. The building is supplied with double doors and windows, and a tower, rising some fifteen feet above the roof of the observatory. During the winter months, the conveyance of any bulky article to the top is impossible; the observatory is consequently provisioned and coaled for nine months; and during the most of that time, the 'sky crofters' have to exist on tinned meats, biscuits, and fare of a similar kind. They are connected by telegraph to Fort-William, which office, when all other communication is cut off, keeps them informed of the doings of the lower world. The observers are cheerful and enthusiastic, and sacrifice much in the cause of the science for which they are working; and if they cannot supply conditions of weather to suit the individual likings of the British public, as some people would have them, the recent publications of the Scottish Meteorological Society show that the Ben Nevis observations have been the means of throwing light upon a great deal of hitherto doubtful and unexplained phenomena. How soon and to what extent the country will feel the practical benefit of the work of the observers on Ben Nevis remains to be seen. In the meantime, all that can be done is being done, faithfully and well, by the three gentlemen stationed at the observatory; and it remains with the public to give the Scottish Meteorological Society the encouragement and financial support which it deserves.

SOME RAILWAY HUMOUR.

Our most celebrated living art critic, Mr Ruskin, has a very strong objection to the railway being carried through any district where there is exceptionally beautiful scenery; and yet a railway and its stations do not of necessity disfigure the landscape; indeed, there are many pretty railway stations dotted here and there over the country. It may be, however, that most of the whole number are anything but pleasant places, and it may be concluded that very few of them are places calculated to give much amusement. Still, there is one which may be said to supply both of those requirements. A house near to it was advertised as an eligible summer residence, on both of the above-mentioned accounts. 'It commands,' said the advertisement, 'not only a view of the pretty little railway station, but also of the people who miss the trains.' Thus were insured combined beauty and amusement.

Railway plant is not very suggestive of humour. Such of the drollery as one comes across is almost as heavy and quite as lumbersome as the greater part of the plant itself. Surely it must have been a serious travail of the mind to bring to light such a conundrum as the following: 'Why is a locomotive engine like a comet?—Because it has a head-light and carries a long train.' Of course there are worse jokes, even off the line, but one does not often meet with them. A New York paper is guilty of perpetrating the following: 'A Western railroad Company is seriously thinking of calling its main road "The Primogeniture Route," because it is the heir line.'

A very fair attempt at a joke of the lugubrious kind was once committed by a guard on one of the short midland lines. The Company was very small and very poor, and it was just a little more than they could do to make ends meet at the yearly day of reckoning. There were not many conveniences for the passengers, and indeed they were not quite so much cared for as the goods in the wagons that were mixed up with the carriages. As for the guard, at some of the stations on the line he was ticket-clerk, station-master, passenger-porter, and goods-porter all in one.

Just before leaving the junction on a certain day, a fussy passenger called him to the window. 'Look here, guard,' he said; 'why don't you have foot-warmers in these carriages? We shall get our death of cold.'

'Well, you see,' responded the guard, 'one of our directors is a doctor, another is a chemist, and another is a tombstone mason; and you know in this world people must live and let live. So, you see'——

'All right, guard; go ahead. You ought to have had another director a coffin-maker, and then we could have got up a special catastrophe for the benefit of the directorate.'

'We have a coffin-maker amongst them, sir; but I thought it would be too suggestive to mention him.'

'Ah, well, it *is* rather suggestive,' said the passenger. 'So, what do you think of an accident, for the express benefit of your mixed lot of directors?'

'Express, did you say?' asked the guard. 'Ah, you have not been on this line before, or you would not talk like that. Why, sir, we don't go fast enough to come to any harm, even if we ran off the lines; and as for a collision, that is an impossibility, for our only other engine is laid up with a twisted cylinder and a broken wheel.'

Charles Dickens wrote a very humorous homily upon railway refreshment inconveniences; indeed it was one huge joke at the expense of the Companies, and for the benefit of the public at large. Had he wanted a text at the time that should be exactly to the point of his *Boy at Mugby*, he might have found it in one of the prophetical books, where it says: 'And he shall snatch on the right hand, and be hungry; and he shall eat on the left hand, and they shall not be satisfied.' The story was literally true then of nearly all stations, while now it may only be said to be an accurate description of some here and there. Still, some approach was made to it at that refreshment room on the line before referred to in the earlier part of this account. The train stopped one day, and a famished passenger called a newsboy to the window and said: 'Here, boy, take these two pence and fetch me a penny bun, and get one for yourself with the remaining coin.'

The boy rushed off at double-quick speed. The passenger was on pins for fear the boy would not return in time. He did return eating; and as he swallowed the last bit, he handed one of the pennies in at the window, saying: 'Here's your penny, sir; there was only one bun left.'

Railway-men are not celebrated, like cabmen, for instance, for having much power in the way of repartee, but now and then they are the occasion of it in others. At a certain station a porter promptly offered assistance to a bishop, who was more often out of his diocese than his people liked. He was a humorist, loved continental trips, and carried a good deal of luggage with him.

'How many articles, your lordship?' asked the porter.

'Thirty-nine,' replied the bishop with a twinkle in his eye.

'That's too many, I'm afraid, your lordship,' said the man stolidly and in perfect good faith.

'Ah!' responded the bishop dryly, 'I perceive that you are a dissenter.' And the porter did not see the joke.

This density was well shown on the North London Railway not long since. A passenger remarked in the hearing of one of the Company's servants how easy it was to 'do,' as he called it, the Company. He declared that he had often taken them in. The servant was on the alert in a moment; thought he had got a case, and determined to make the most of it. He listened.

'I have often,' said the passenger to his companion, 'gone from Broad Street to Dalston Junction without a ticket. Any one can do it, easily; I did it myself yesterday.'

When he got out of the train, the servant of the Company followed after, and wanted to know how it was done. At first, the passenger would not give the information; but at last, for a little monetary consideration, he agreed. The money was paid.

'Now,' asked the official, 'how did you manage to get from Broad Street to Dalston Junction without a ticket?'

'Oh,' said the passenger with a smile, 'I simply walked the distance.'

That railway servant grimly saw the joke, but felt that he had paid for it rather dearly.

On the old Stockton and Darlington Railway, in the days when that Company took the preachers of the gospel at half-price like children, one of the ticket-clerks, when asked for a minister's ticket by a somewhat unclerical-looking man, expressed a doubt as to his profession. 'I'll read you one of my sermons, if you doubt my word,' said the minister. 'No, thank you,' said the ticket-clerk with a gloomy smile, and handed the ticket over without any further proof.

But if the railway-man is not ready in repartee, from an apparent desire not to talk, this desire having been the natural result of the demand made upon him to answer so many frivolous questions, he cannot be said to be unequal to an emergency. A ticket-inspector was chosen deacon of a church, and when it became his duty to take up the collection, he startled the congregation into rather indecorous smiles by blurting out his habitual and characteristic demand of 'Tickets, gentlemen!' and it is even averred that the collection was much larger than usual that day. It must have been the same man who one day, at a combined concert and public meeting, had a presentation made to him, and was consequently called upon to make a speech in response. For a time he shook his head; but at last relenting, he said: 'Well, I've only one speech.'

'All right; give us that!' several called out.

'Very well,' he assented; and looking round for a moment, he exclaimed, according to the order of the classes of passengers: 'Tickets, if you please, gentlemen; tickets, please; tickets!' and retired from the platform. It is said that the speech was so effective, that the band could not play for full ten minutes, and that the audience could not have listened to them even if they had played.

Still, there was once a railway-man who must have been a wag at heart. He was an engine-driver, and had been discharged for not exercising due care in the course of his duty. He

applied to be reinstated in his former occupation, when the following dialogue took place.

'You were dismissed,' said the superintendent austerely, 'for letting your train come twice into collision. Once we could have overlooked, and we did so on your first occasion; but it is impossible for us to pass over a second offence, and you only waste your time in making such an application as you are now proceeding with.'

'Why,' said the engine-driver, interrupting him, 'that is the very reason why I ask to be restored to my work.'

'How so?' asked the superintendent in astonishment.

'Because, sir,' replied the man, 'if I had any doubt on the first occasion as to whether two trains could pass each other on the same lines, my doubt is now entirely removed. I am now completely satisfied. I have tried it twice, sir, and I find that it can't be done; and you may take my word for it that I shall not try the experiment again.'

And he did not, for they would not allow him the opportunity.

WITWATERSRAND:

THE NEW GOLDFIELDS OF THE TRANSVAAL.

WITWATERSRAND (white-waters-rand), so called by the Dutch settlers on account of its fountains of clear (or white) water, is a range of low hills running irregularly across the South African republic, and situated at a distance of thirty-six miles south of Pretoria. A tract of country extending longitudinally about fifty miles, and in varying but much smaller distances in a northerly and southerly direction, has been thrown open as a public goldfield, and frequent additions are being made to its already extensive area. Previous to the discovery of gold, and its consequent 'rush,' the district was pastoral and entirely in the hands of Boers, who occupied farms of from five to six thousand acres each, and who devoted their energies to the rearing of cattle and sheep, only very small patches of land being under cultivation, and these usually producing barely sufficient for the requirements of the Boer's family and stock. The *veldt*, as this pastoral land is called, is of an undulating and, except in swampy places and during the rainy season, of a parched and barren nature, devoid of trees and bush. It is an uninviting locality except for gold-digging. For some years, it has been thought that this was a gold-bearing district, and 'prospecting' of a desultory nature has been carried on; but it is only within the past few months that the area has been proclaimed auriferous, and the existence of payable gold indisputably proved. During this short time a population of more than two thousand has scattered itself over the 'Rand,' as Witwatersrand is colloquially termed, and a steady influx is daily augmenting the number. Camps have sprung up like mushrooms; the main camp, or, as it is called from its originator, 'Ferreira's Camp,' is a straggling collection of huts and tents, interspersed with a few houses of a more pretentious nature, which are constructed of corrugated iron and brick. There is a long main street, and a market square, with innumerable stores and canteens; but the general appearance of the camp suggests its sudden growth, and probable equally sudden disappearance, leaving behind it only the debris and dirt which seem to be the natural concomitants of a mining camp. Ferreira's Camp, with its dirt and discomfort, its wretched hovels of reeds and mud, its gambling and drinking dens (literally dens), its dust and filth and glaring uncleanness, is the centre of commerce for the Fields, and a busy bustling place. Here are sold all the requirements of a mining community; here are conducted the various transactions in claims and shares which constitute part of the financial speculations of the Fields; and here are held those periodical sales of horses, cattle, vehicles, and general merchandise which are so dear to colonists, and such a marked trait in their characters, that wherever a few of them are gathered together, an auctioneer is an absolute necessity.

There are other camps, some of them approaching in size to a small canvas village, while many are dotted about the *veldt*, and consist in most instances of two or three tents and a wagon. The population of the Goldfields is of that miscellaneous and motley character which always seems to gravitate to mining camps. As yet, only a few Australian and Californian diggers have put in an appearance here, and they seem somewhat out of their element, the pronounced difference in the general formation and association of the precious metal to its existence on other Fields being quite at variance with their notions of the eternal fitness of things; yet they are very sanguine of the great future before the Fields, and they emphatically and repeatedly assert their confidence in language bristling with a species of decorative profanity peculiar to their class.

The Jews are very numerous, and active in speculation, buying and selling, and in a most disinterested manner; and at terrific risk and inconvenience providing sophisticated gold for the purpose of producing the crude article; but their untiring labours are always conditional, and they will reap their reward at who knows how much per cent. Speculators from the Diamond Fields, representatives of syndicates from all parts of South Africa, farmers, merchants, professional men, clerks, mechanics, ex-members of the Bechuanaland Field Force, and adventurers, jostle each other in the race. Honest citizens and escaped convicts, gentlemen and blacklegs, university men and the scum of racecourses, stand cheek by jowl, and metaphorically shake hands in the same ring; and yet it is a most peaceful and law-abiding community; robbery and violence are practically unknown; drunkenness is the common vice, but is in no way excessive; and gambling, the natural atmosphere of a portion of the community, is very prevalent.

Witwatersrand possesses an exceptionally healthy climate. Occasionally, the extremes of heat and cold which occur in the course of a day and night are very marked, but do not appear to produce more than trivial and temporary ill effects. A violent wind, which springs up suddenly, but is of short duration, sweeps with fearful force over the plain, carrying with it clouds of dust, and requiring all hands to 'stand by' the tent poles and guy ropes during its paroxysm, which is quickly exhausted, the storm subsiding as suddenly as it appeared. These

winds are of almost daily occurrence, and serve a sanitary purpose as the 'doctors' of the camp. The general health of the Fields is excellent, no serious cases of sickness being known.

Gold-digging on these Fields will be confined to quartz-mining, and loses many of the charms which are supposed to be associated with alluvial digging or diamond-digging in the early days. Expensive and complicated machinery must be used; the quartz must be crushed and washed on a gigantic scale, cheap labour procured, water-courses constructed, tramways laid for miles, to carry the quartz to the mills; and altogether, gold-mining will be an unromantic but steady and dividend-paying industry. The ideal digger with pan and cradle will have no existence in the future of these Fields, unless the at present apparently improbable discovery of payable alluvial gold should be made. Individual claim-holders who were fortunate enough to 'peg out' on good ground when it was first proclaimed, will be splendidly rewarded, by being able to sell out to the various Companies which are already formed or in course of formation; for if their claims are good, they will realise handsomely on them. As much as a thousand pounds has been paid for a single claim which only cost the holder—who had it for five months—the monthly rental of one pound, which is the sum required per claim in order to retain it and secure the protection of the government. There are many poor men who are original claim-holders, and are anxious to sell out, but ask too high a figure; and the Companies can be patient, whilst the hard-up holders must at last succumb and make the proverbial bad bargains of necessity.

The matrix in which the gold is found is a conglomerate, changing into quartzite and quartz reef—or, as some prefer to call it, a 'deposit,' and deny the existence of reefs at Witwatersrand. This is a dispute of very little practical importance. The name of reef has been generally adopted for the underground ridges of quartz and conglomerate in which the gold exists, and will no doubt always bear that name. The reefs are very numerous, and in some places crop out of the surface; they are all gold-bearing, and yield varying amounts of the precious metal, from a few grains to five ounces, and in exceptional cases, ten ounces, to the ton of quartz. The conglomerate, which forms a thick casing to the quartz reef, is a peculiar formation of almond-shaped pebbles, pressed into a solid mass in a bed of rock of an igneous nature, and is called 'Banket' on account of its resemblance to a favourite Dutch sweetmeat known in England as almond rock. The 'Banket' is also rich in gold. The reefs are very erratic in their formation, making sudden dips and striking off in unlooked-for directions; but in all cases where shafts have been sunk, they are proved to be of a permanent nature, and test-washings from any part of the reef or casing invariably give 'colour.'

Machinery is being fitted up from England, and, once in operation, will give a wonderful impetus to the Goldfields, as everything is now in a state of suspense, and mining has been confined to exposing and ascertaining the extent and direction of the reefs and proving their gold-bearing nature. This, with transactions in shares and speculations in claims, has necessarily been all that could be done towards the development of the Fields; but nothing could be more satisfactorily proved than the existence of an unlimited quantity of payable gold; and the prospects of Witwatersrand are as bright and cheering as the most deeply interested investors ever anticipated. The South African Goldfields at present are decidedly not the place for poor men; the congested state of the labour market here has found an outlet in the Fields, and they are now overstocked with all descriptions of non-capitalists. This country will, however, provide a home for many thousands in the not far distant future.

THE MONTH:

SCIENCE AND ARTS.

THE meeting of the British Association for the present year will take place at Manchester on August 31, under the Presidency of Sir H. Roscoe, M.P., F.R.S. The several sections will have as Presidents, Sir Robert S. Ball, Astronomer-royal for Ireland, for Mathematics and Physics; Dr Schunck for the Chemistry section; Dr Woodward for Geology; Professor Newton for Biology; General Sir Charles Warren for Geography; Dr Robert Giffen for Economic Science; and Professor Osborn Reynolds for Mechanical Science. With this concourse of good names, it is expected that the meeting of 1887 will be a memorable one.

An Order in Council has been issued declaring the following monuments to be 'ancient monuments' under the provisions of the Ancient Monuments Protection Act of 1882: Little Kit's Coty House, or the Countless Stones of Tottington, in the parish of Aylesford, Kent; the Chambered Tumulus at Buckholt, Gloucestershire; the Druids' Circle and Tumulus on Eyam Moor, Derbyshire; the Pictish Town of Carloway, Ross-shire; the Ruthwell Runic Cross, Dumfriesshire; and St Ninian's Cave at Glasserton, Wigtownshire. The Order will become law after lying for forty days on the tables of both Houses of Parliament.

A French paper publishes a new method of platinising metals, which is said to be not only effectual, but to be only one-tenth the cost of nickel-plating. The necessary operations are as follows: The object to be coated is first of all covered with a mixture of borate of lead and oxide of copper in turpentine, and submitted to a temperature sufficient to melt this deposit, and to cause it to spread over the metal in a uniform layer. Next, a second layer of the same composition is laid on; but in this case, oil of lavender takes the place of the turpentine used before. Finally, the article, thus doubly coated, is brushed over with a solution of chloride of platinum, and submitted to a heat of two hundred degrees. The platinum is said to adhere firmly to the surface, and to exhibit its characteristic brilliancy—a brilliancy which does not tarnish.

A scheme has been proposed by which the

town of Lanark, on the river Clyde, is to be lighted by electricity, the necessary motive-power for the generating machines being procured from the Stonebyres Fall. At a meeting recently held, the inhabitants of the district were most enthusiastic in their support of the project; and if terms can be arranged with the owners of property adjoining the site of the proposed works, the scheme will most probably be carried out at an early date.

Professor Macadam has lately given a description of a sample of talc obtained from New Jersey, which is very largely employed in paper-making in place of kaolin or china clay. It is of such a fibrous nature that it readily attaches itself to the smaller particles of paper, and causes them to be retained, instead of being washed away. It is said that the beautiful quality and smooth glaze of American papers are primarily due to the use of this mineral.

In a lecture upon Wrought Iron lately delivered by Mr J. S. Gardner at the Society of Arts, attention was directed to the great superiority of medieval ironwork to that of the present day. The lecturer was inclined to attribute this to the circumstance, that in the middle ages important work of this kind was intrusted only to men who had an aptitude for it. If the right man could not be had, the work was not executed except in a very simple form. But if a skilled workman were forthcoming, the design, or at anyrate its details were left to his own fancy. 'He was not fettered by estimates nor bound by time.' Yet, according to Mr Gardner, the work was more quickly done than it is now.

A very common error, and one which has again and again found its way into print, is that water when turned into ice is subjected to a kind of natural purification, by which it is at once rendered safe for potable purposes. That this theory is quite untenable has been more than once pointed out, but never more conclusively than by a Report lately made by the State Board of Health of New York. This Report contains the analysis of some ice taken from Onondaga Lake, into which lake is discharged the sewage of the city of Syracuse, amounting to five million gallons a day. Analysis proved that the ice contained about twelve per cent. of the sewage impurities dissolved in the same quantity of unfrozen water of the lake. The presence of bacteria in great abundance was also demonstrated, their growth being somewhat retarded, but by no means destroyed by the ice. There are numerous cases on record where dysentery and other diseases have been induced by the use of ice from impure water.

It was recently exemplified in the metropolis on the occasion of a suspected murderer being 'wanted' by the police, that the wide circulation of the man's photograph had no influence in procuring his arrest. Again, in France lately, a suspected man having come to the end of his money was compelled by hunger to enter a restaurant. In this house there happened to be sitting a policeman who had in his pocket a portrait of the wretched man, and yet failed to recognise him. Do these failures indicate that the pictures were unlike those for whom they were intended?—or are the police of both countries very unintelligent members of the human family? We are inclined to think that the explanation of the problem may be found in an unexpected direction. The cheap photographs taken by itinerant operators 'while you wait' give a reversed image of the sitter. This he does not detect himself, for he is used to see his face thus reversed every time he looks in a mirror. But such a likeness—and such likenesses often form the original from which copies are multiplied for police use—conveys a very different idea to a stranger. We may add that the difficulty could easily be obviated by again reversing the image in the operation of copying the photograph.

A valuable application of photography, but one which is not used so much as might be wished, has been adopted by an American Company for the preservation of valuable manuscripts against loss by fire. The method has the merit of extreme compactness, so that trouble in storage and handling is reduced to a minimum. The method simply consists in copying the pages, with all the interlineations, corrections, &c. on a reduced scale of two inches per page. These leaflets are perfect, although so small, and can easily be made legible when magnified. We may remind our readers that a similar expedient was adopted during the last siege of Paris, when the whole of a newspaper was reduced to such tiny dimensions that the copy could be contained in a quill. This quill was fastened to the tail feathers of a pigeon, the only kind of biped which could escape from the French capital at that time.

The United States Fish Commission print a very interesting Report on Hawaiian Fishing Implements and Methods of Fishing, which contains a curious account of the method adopted for securing the octopus. The smaller kinds are caught in shallow water by women, who accomplish the work with considerable skill; but the larger kinds of octopus are dealt with by the men. The bait is a cowrie, the shell of which must be of a particular shade of colour, to tempt the octopus from its hole. Arrived at the fishing-ground, the fisher, after chewing some candle-nut, ejects it from his mouth into the water, so that the oil will insure a glassy surface, through which the man can watch his prey. The line with cowrie attached is then dropped into the water, and seized by the octopus, which will generally closely hug it and coil itself all round it. The line is then drawn to the surface, and the octopus is killed by a blow from a club between the eyes. This blow has to be given with skill, or the creature may prove to be a very dangerous foe. It is stated in this Report that the amputation of one or more of the eight arms of this unattractive creature does not in the least affect the efficiency of the remainder.

According to the will of the late Sir Joseph Whitworth, those of the pictures he has collected which have been painted by Members or Associates of the Royal Academy, are, after the death of Lady Whitworth, to become the property of the Manchester Corporation.

XUM

The American government have recently sent to this country a large consignment of fish-ova, that of the Whitefish (*Coregonus albus*), which are destined for the hatchery at Delaford Park. It is believed that this valuable food-fish will thrive well in the waters of the United Kingdom, and more especially in the Scottish lakes, which are well adapted to the natural necessities of the fish in question. The experiment is one which will be watched with great interest, for, if it is successful, it will indicate a very important addition to our food-resources.

The Tobacco trades section of the London Chamber of Commerce, in order to encourage the culture of the 'weed' in the British possessions, offer two prizes of fifty guineas each, to be awarded respectively to the best specimen grown in the United Kingdom, and for that produced in India or the colonies.

A paper upon Tobacco-growing in England, which was lately read by Mr E. J. Beale before the Society of Arts (London), gave some valuable information regarding the experimental tobacco-culture which took place near the metropolis last year. In summing up the results obtained, he asserted that successful culture must depend upon the observation of rules laid down by English experimentalists rather than by following the methods employed by other nations. With regard to the cost of tobacco-cultivation, he puts it at twenty-five pounds seven shillings and eightpence per acre; which, if the produce yields fourpence a pound, would show a net profit of from ten to twenty-four pounds per acre. In the discussion which followed the reading of this paper, the wish was expressed that many would be induced to cultivate a small patch of tobacco, which could be done with sixpennyworth of seed. The wide experience thus gained would be most useful in determining the possibility of making the culture pay on a larger scale. We may add that such experimental growing of tobacco can now be prosecuted without taxation by going through certain formalities prescribed by the Revenue department.

The earthquake shocks with their lamentable death-roll which occurred in Southern France and Italy in February have reminded a contemporary that some of the greatest earthquakes recorded in previous years have taken place in the same month. In 1531, Lisbon was destroyed by an earthquake which buried thirty thousand persons in the ruins. In 1703, an earthquake at Aquila, in Italy, killed five thousand persons. Eighty years later, Italy and Sicily were shaken by an earthquake which destroyed many thousand lives. In 1797, an earthquake in Central America destroyed forty thousand persons in one brief second of time; and lastly, in 1835, an earthquake took place in Chili which was of a most disastrous character. All these catastrophes took place in the month of February.

We have heard so much lately about swords and cutlasses supplied to the British army which are little better in quality than old hoop-iron, that we begin to lose faith in the vaunted excellence of British cutlery. But it would seem that the best of cutlers in this hemisphere can learn a good deal from the sword-makers of Japan. According to *Iron*, these men turn out weapons of the most marvellous character, not to be matched by the blades forged in Damascus and Toledo, which have figured in so many stories of our boyhood. It is stated, as a not uncommon feat, that a Japanese soldier can cut a pig in two at a single blow, and that he can similarly divide bars of lead, and even of iron, without notching or injuring his sword-blade. A sword is also mentioned of such excellent quality that a floating leaf drifting against it while the blade is held in a stream will be cut in two. If it be the fact that the Japanese understand the tempering of steel so much better than we do in this country, the sooner that a few skilled artisans are sent out there to learn the methods adopted the better it will be for Britain in general, and for our military authorities in particular.

A steamship is about to be built by the Arrow Steamship and Shipbuilding Company of New York, which it is believed will leave the swiftest ship afloat far behind in point of speed, and which will, it is said, mark an era in the trans-atlantic trade. This ship, which is already named the *Pocahontas*, is to be constructed on an entirely new principle. It will carry no heavy goods, and the speed it is calculated to attain will enable it to cross the Atlantic in four days! The length of this unique vessel will be five hundred and forty feet, with a beam of forty feet, and a draught of twenty-five feet. The engines will be of twenty-seven thousand nine hundred and eighty-six horse-power, and will be fed by twenty boilers.

A simple seismometer, or measurer of earthquake shocks, has recently been suggested. It consists of a cup with four equidistant lips, filled with mercury. These lips should be placed so as to correspond with the point of the compass. The intensity of the shock can be gauged by the amount of quicksilver displaced, while its direction is indicated by noting the particular lip from which the metal dropped. The instrument must be fixed on a firm base, free from vibration caused by mere local circumstances, such as the passing of a heavy wagon, and it is evident that means must be adopted to prevent the evaporation of the mercury.

Liquids which are liable to great expansion with any rise in temperature cannot be safely stored in wooden casks. To meet this difficulty, Messrs Hein, Lehmann, & Co. of Berlin have recently introduced casks made of corrugated and galvanised iron. It is said that while these casks are much lighter than wooden ones, they are much stronger, and will last much longer. The corrugations are parallel with the hoops, which are tubular. These casks are now used for the transport of oils, spirits, and even beer. They will withstand an internal pressure of thirty pounds to the square inch.

The scheme for constructing a ship-railway across the isthmus which joins North and South America together as by a slender thread, will most likely sink into oblivion now that Captain Eads, its promoter, is dead. The scheme, of which we gave a detailed account in this *Journal* for October 3, 1885, was indeed a bold one, and if it had been suggested by any one but a successful engineer, would never have been listened to. Captain Eads maintained that a broad railway could be made which could carry ships of

the largest size from the Pacific to the Atlantic, or *vice versâ*, at a far cheaper rate for construction and maintenance than a canal.

The American consul in Honduras in a recent Report speaks of the Pita plant which could be usefully applied to many manufactures, but which has never been cultivated. In Honduras, it grows up in such wild luxuriance on the banks of every river and lagoon which happens to be situated anywhere below an altitude of two thousand feet, that it can be had in abundance for the mere cutting of it. The natives make of it thread for sewing boots and shoes, nets, fishing-lines, hammocks and cordage generally, and a thousand other things. It has also been manufactured into handkerchiefs, laces, and ribbons. There seems, however, to be some little difficulty in separating the fibre from the plant without rotting or injuring it.

Mr J. H. Fisher of Dunfermline recently read an interesting paper, before the North British branch of the Pharmaceutical Society of Great Britain, On the Action of Freezing Solutions on Ice-cream Solutions. In the course of this paper, he showed how the employment of certain freezing mixtures in conjunction with the metal zinc, of which the machines are now commonly made, would lead to the formation of poisonous compounds, as well as to the early destruction of the metal-work. There have been cases of poisoning by cheap ices which might possibly be traced to this source; and although the author of the paper was careful not to state definitely that this was the case, he said that the symptoms exhibited by the sufferers closely agreed with those which would be due to poisoning by chloride of zinc. From its extreme cheapness, zinc is now largely employed in the manufacture of all kinds of utensils, and something of its chemistry and the nature of the compounds which act upon it should be widely known, in order to prevent disastrous consequences from its careless use.

A correspondent of the *Scotsman* says that Canada is furnishing another explorer for the search for the north pole in the person of Mr Alexander Macarthur, a former employee of the Hudson Bay Company, who started out on his northward trip from Winnipeg on the 20th February with only one companion. Sleighing is to be used until Norway House is reached, and dog-trains thence, proceeding due north to Fort Churchill. From that point he will make divergence to Chesterfield Inlet to see a New Bedford whaler wintering there, from which he hopes to gain some useful information, and by which vessel, on its return, he will forward the only communication to the world he leaves behind, until his return, as once past that inlet the dreary polar wilderness has to be entered. By the middle of May, Mr Macarthur expects to reach Boothia Felix, where the magnetic pole is situated, whence he will push forward through Somerset and Devon Land, keeping west of the Greely route, and in an entirely unexplored country. Mr Macarthur has served a long apprenticeship to semi-arctic life, and a fellow-official of the Company, well known in arctic discovery, Dr Rae, is a personal friend. He is well supplied with instruments, and trinkets for Eskimo trading, and he takes provisions for two months, after which the two explorers will have to depend on their rifles for food. He expects to be absent three years; and the result of his enterprise will be awaited with patriotic pride by his Canadian fellow-countrymen, who hail the enterprise as undertaken by one of themselves well adapted for its hardships.

Brunel's steamship, the *Great Eastern*, the largest vessel ever built, and the construction of which cost half a million of money, has been sold to the London and Australian Steamship Company for the small sum of twenty-six thousand pounds. This Company is forming a fleet of steamers to trade between this country and the antipodes, and the big ship is to take her place in this service. To fit her for the duty, her cumbrous paddles will be removed, and the whole of her machinery renewed in favour of more modern patterns. The work of renovation is in the hands of the Fairfield Ship-building Company of Glasgow, and the cost of the projected improvements is estimated at one hundred and sixty thousand pounds. It is expected that a speed of twenty knots will be attained by the vessel when these works have been carried out. If we remember rightly, her old speed was only fifteen knots, a rate of progress which much disappointed her gifted designer.

OCCASIONAL NOTES.

UTILISATION OF NATURAL GAS.

An experiment of singular interest has just been brought to a successful issue in Pennsylvania, U.S.A., which may possibly in the near future cause a revolution in public economy in the coal districts of the United Kingdom. We refer to the practical utilisation of natural gas both for domestic and industrial requirements. Thus, in Pennsylvania the natural-gas region covers an area of about four hundred square miles; the gas lies immediately below the clay-beds, and a tapping of the reservoir is the only labour required to procure a steady supply of first-class gas. The pressure is generally found to be very great, something between five and six hundred pounds to the square inch; a serious drawback if it be wanted for immediate domestic use; but, on the other hand, this high pressure enables the gas to be conducted in eighteen-inch tubes great distances without any additional mechanical contrivance. Methods have also been found for aërating the gas with oxygen, in order to reduce its pressure and quality when necessary. The great centre of manufacture in this region, Pittsburg, is now almost entirely supplied with this gas, even factories working with it, and thus economising their heavy outlay in coal. The operatives and inhabitants generally also benefit by this new discovery, every house being supplied with a practically unlimited supply of gas for lighting and cooking purposes at a merely nominal rate per annum; for the gas is so plentiful and easily got at, that public opinion would not tolerate its being sold by measure.

It is conjectured that these vast accumulations of natural gas are derived from the petroleum springs; but as the gas and petroleum districts are quite distinct, and some little distance apart, and, moreover, coal-mines—anthracite and

bituminous—are within or quite near the gas region, it is quite as likely that this natural gas is nothing more than after-damp, or a product of after-damp, which has escaped from the coal-beds and old unworked pits and galleries. Should this latter conjecture prove to be a correct solution of the as yet unsolved mystery, it will at once be seen that in England, Scotland, and Wales we may also possess vast natural gas regions. It would then only be necessary to discover the whereabouts of the subterranean gas deposits, when artesian wells could be sunk, and the gas brought to the surface ready for immediate use. The practical benefits of such a discovery would be immense; for not only would there be an enormous saving in fuel, but one of the great drawbacks of the manufacturing districts of our country, the stifling, life-destroying pall of smoke, would be greatly diminished, if not entirely done away with. This would be a great gain. But to counterbalance the boon, it would probably be found that after some length of time the consumption of the gas would produce more or less severe land depressions or subsidings, like those in our salt districts, and as they expect in the neighbourhood of Pittsburg. There is yet another drawback to the discovery of vast reservoirs of these gases in our country—such discoveries would be likely to be serious blows to the mining industries, as less coal would be consumed in the immediate neighbourhood of natural-gas tappings. However we must recollect that any serious revolution in industrial economy invariably brings a certain amount of hardship in its train; nevertheless, this should be no valid reason against practical steps being taken to ascertain whether we cannot imitate our transatlantic cousins.

A SUBSTITUTE FOR GUTTA-PERCHA.

The public will be gratified to learn, from a Report in the *Journal of the Royal Agricultural Society of British Guiana*, that an admirable substitute for gutta-percha has been found in the milk-like secretion, or juice, of the Bullet Tree (*Mimusops balata*). Dr H. Muller had submitted a sample of this curious tree to an india-rubber manufacturer, who said that he treated it as a superior kind of gutta-percha; but it appears that it is a distinct substance altogether, being much softer at ordinary temperatures, and not so rigid in cold. It also possesses the great advantage of not becoming brittle when exposed to light and air, whilst the property of insulating for electricity is said to be equal to gutta-percha. Balata has been known for the last twenty-five years, but never has gained any commercial importance until recently. In 1882, upwards of one hundred thousand pounds were brought to the English market, commanding a price of one shilling and threepence per pound. It is collected chiefly on the Canjé River, which falls into the Berbice River, between the Amazon and the Orinoco. The tree often reaches the height of one hundred and twenty feet, and grows with a fine spreading head. The trunk is sometimes sixty or seventy feet long, and four to five feet in diameter; but the majority are not nearly this size. Specimens of the tree seem to be plentiful throughout the region named.

A SHIP-CANAL FOR BRUSSELS—CANAL ACROSS THE ISTHMUS OF PEREKOP.

Paris and Manchester having both resolved on a ship-canal, it now appears that Brussels is determined not to be behindhand, and therefore a proposal has been made to the municipality to construct a ship-canal to the Scheldt, having a depth of six and a half metres, with quays sufficiently capacious to allow twenty ships, of two thousand five hundred tons each, to unload or load; and the whole is to be connected with the great Belgian lines of railway. The scheme is a bold one; but the Company who will undertake it—if it is carried out—is an English one, and the contractors and workers will doubtless be English too.

Whilst on this subject, we may mention that such another scheme is about to be attempted in South Russia, by the cutting of a canal across the Isthmus of Perekop, to connect the Sea of Azov with the waters of the Black Sea. By this plan, a saving of one hundred miles of very rough sailing will be effected, and more especially the dangerous passage of Kertch, which in winter is constantly closed by ice. It is supposed that the making of this canal will greatly improve the coal and salt trades of Donetz and Odessa, which alone, in a commercial point of view, is a matter of the highest importance.

BOAST NOT OF TO-MORROW.

The Lark said: 'Lo! the winter has gone by;
Buds will be bursting; I shall greet the spring;
The snow has vanished, and bright days are nigh;
I soar into the blue, my song to sing.'
But ere he plumed his wings for happy flight,
Deep snow came down, and veiled the fields in white.

The Floweret said: 'In this warm, sheltered nook,
My blossom I will spread before the sun,
And he will smile on me with gladsome look.'
But the dear floweret, ere the day was done,
Shrivelled before the north wind's frosty breath,
Trembled, and closed her bright-blue eyes in death.

The Maiden said: 'My true love is away;
But soon his ship will come across the foam,
And life will then be lovely, bright, and gay,
And blessed days will gladden our fair home.'
But as she dreamt her happy dreams and smiled,
His barque went down at midnight dark and wild.

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XUM

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'The soul's dark cottage, battered and decayed,
Lets in new light through chinks that time has made.'
'What higher aim can man attain
Than conquest over human pain?'

'Knowest thou yesterday its aim and reason?
Workest thou well to-day for worthy things?
Calmly wait to-morrow's hidden season;
Need'st not fear what hap soe'er it brings.'

ENO'S 'VEGETABLE MOTO.'

DUTY.

A SIMPLE VEGETABLE EXTRACT. Occasionally a Desirable Adjunct to ENO'S FRUIT SALT.

AS A LAXATIVE, STOMACHIC, BLOOD, BRAIN, NERVE, BILE, or LIVER TONIC, it will be found invaluable for creating and sustaining a natural action of the Stomach and Biliary Secretions. In a word, ENO'S 'VEGETABLE MOTO' is mild, effective, and agreeable, and lasting, without force or strain. Indigestion, Biliousness, Sick-headache, Gout, Rheumatism, Female Ailments, Suppressed Secretions, &c., Head-affections, Nervousness, Sleeplessness from Liver derangement, Flatulence, Wind on the Stomach, at the commencement of Coughs and Colds, Blood Poisons and their kindred evils, are prevented and cured by the use of the 'VEGETABLE MOTO' and ENO'S FRUIT SALT.

A REGULAR ACTION OF THE EXCRETORY ORGANS OF THE BODY is produced by natural means; for distinctly understand, it is impossible for a single tissue of the body to be kept in order if the effete or poisoned substances are not got rid of by a natural and healthy action of the Liver, Bowels, and Skin.

THE HEALTHIEST OCCASIONALLY SUFFER TEMPORARY DERANGEMENT OF THE STOMACH AND LIVER. With ENO'S 'VEGETABLE MOTO' and ENO'S FRUIT SALT you can always relieve, and never do harm; little may be needed, but still, when you have a simple and prompt assistance, many dangerous forms of disease may be arrested and removed at the outset, for this is the time or chance. ENO'S FRUIT SALT and 'VEGETABLE MOTO' should always be kept in every bedroom and every travelling trunk ready for any emergency.

IMPORTANT TO THE DYSPEPTIC AND INVALID.—A pamphlet of 16 pages is given with each bottle, on PREVENTION. The recurrence of small ailments can only be averted by strict attention to dietetic rules, also rules for life.

'MR ENO.—Dear Sir—I have derived great benefit from your invaluable "Vegetable Moto." I suffered severely for three months, consulted three eminent medical men, and had three changes of air without any good result; my liver and digestive organs felt as if they had ceased to act; my stomach was distended with flatulence (wind) so that every part of the body was afflicted. My head at night seemed to hear a hundred bells ringing. I was compelled to be propped up in bed; the severe pain under my shoulders and on my left side produced a restlessness not easily described; in a word, prior to using your "Vegetable Moto" my life was a burden to myself and all near me; in fact, I felt there was a very short span between my life and the end of the chapter. I was induced to try your "Vegetable Moto." After three days I was able to take sufficient food to support nature, sleep gradually returned, and my general health rapidly assumed its usual condition; I continued the "Motos" every day for five weeks. I express my gratitude to you by saying, make what use you think fit of this. Yours, &c. TRUTH.

'London, 1886.'

BILIOUSNESS, SICK-HEADACHE.—A GENTLEMAN writes: 'The "Motos" are of great value. I have suffered from Biliousness, &c. for upwards of forty years; I have taken ENO'S FRUIT SALT for upwards of twelve years, the "Motos" about two; I have never known them fail. There is nothing drastic or any discomfort in using them.—X. Y. Z., 1887.'

A GENTLE AND CORRECTIVE ACTION.—'MY DEAR SIR,—I have taken many antidotes during my life to cause an action on the bowels, but the general effect of your "Vegetable Moto" is happier in more ways than one; I find them gentle and corrective in their action, and in some mysterious way helpful alike to the stomach and liver. I like to have them always at hand.—Yours, N. B. C., Strand, W.C., Sept. 13, 1886.'

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